

October 11, 2022

TO: Anthony Dolan, Council Chair
Council Members
Washington State Building Code Council

FROM: Chuck Murray

RE: Washington State Energy Code Adoption

Thank you for your consideration of the following comments.

I have recently retired from state employment, having most recently served as an energy policy specialist at the Department of Commerce. I served on the energy code TAG for approximately 25 years. During my tenure I staffed the development of state building policies including revisions to the state energy code statute and the Clean Buildings law. I write the following recommendations representing myself.

I encourage the adoption of the energy code TAG recommendations. For the requirements specified in section 406, I recommend the adoption of OPTION 2 (Post-TAG modifications) as put forward by the MVE committee.

Adoption of MVE Option 2 recognizes the efficiency gains in base code amendments and adjust the required R406 credits accordingly. It should be noted, making progress toward the objectives of the state statute requires adoption of both the base prescriptive code change and the proposed R406 option 2 updates. Don't pick them apart.

The adoption of Heat Pumps as a base prescriptive requirement is the best technical solution to meeting the policy objectives for energy savings and carbon emissions. This was made evident in the 2018 energy code analysis commissioned by SBCC.¹ I have copied figure 5 from this report below.

Figure 5 of illustrates that the heat pump home uses about half the space and water heating energy as the gas home. This report also shows the gas-heated home has reduced energy use by 44%, compared to the 2006 state energy code. The heat pump home achieves a 64% reduction compared to the 2006 baseline. Wide adoption of heat pumps will effectively move the code toward the energy reduction objectives required by statute.

To achieve the carbon emissions reductions in the SBCC statutes, electrification will result in the lowest cost. The Washington 2021 State Energy Strategy² included economy wide evaluation of several scenarios for reaching the states carbon emissions reduction requirements. For buildings this included a

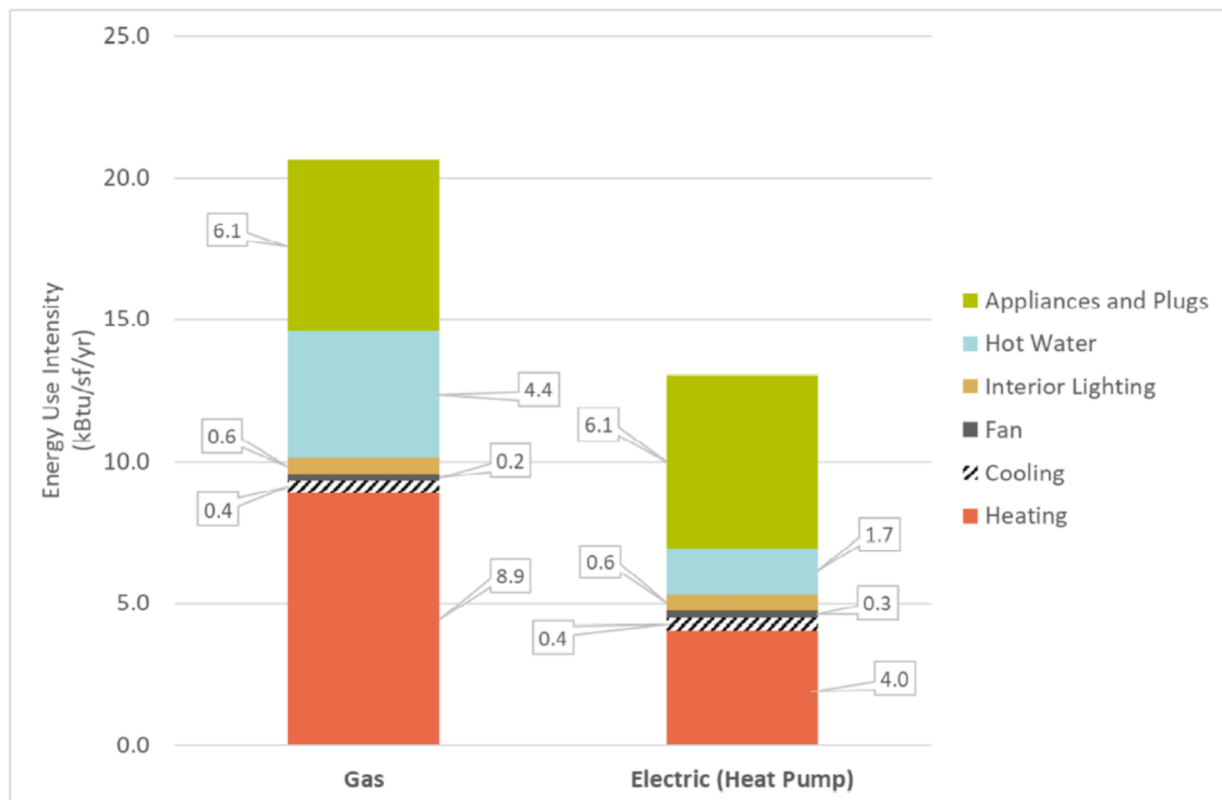
¹ Henry Odum, Et al. Modeling the Washington State Energy Code - 2006 & 2018 Baseline Energy Consumption. Ecotope. <https://www.sbcc.wa.gov/sites/default/files/2020-11/SBCC%20BaselineStudy%20Revised%20inclusive%20Final%202020%20Nov6.pdf>

² Washington 2021 State Energy Strategy, Washington State Department of Commerce, 2021. <https://www.commerce.wa.gov/wp-content/uploads/2020/12/Washington-2021-State-Energy-Strategy-December-2020.pdf>

scenario where the primary measure was the electrification of buildings, where another was the adoption of low emissions gas. The cost considered include building and infrastructure cost. The summary of findings leads with this note:

The Gas in Buildings Scenario is more costly than the Electrification Scenario in 2030 and beyond, particularly when approaching net zero emissions in 2050. This is because greater quantities of clean fuels are required to offset the emissions from gas in the Gas in Buildings Scenario. The cost of those additional clean fuels is higher than the cost of the electrification measures in the Electrification Scenario.

Figure 5. Average Modeled EUI of a Single-Family Dwelling (by EUI) in 2018 – Gas vs Electric



October 11, 2022

TO: Anthony Dolan, Council Chair
Council Members
Washington State Building Code Council

FROM: Chuck Murray

RE: Washington State Energy Code Adoption, technical correction, air leakage rates.

TAG recommendations for changes to the air leakage rate represented in the prescriptive option should also be updated in the performance option.

The energy code TAG recommends adoption of tested air leakage rates as specified in the most recent edition of the IECC. The changes are included in the prescriptive path for code compliance, section R402.4.1.3. To be consistent the performance option should include this change as well. As follows:

**WAC 51-11R-40551 Table ((R405.5.2(1))) R405.4.2(1)—
Specifications for the standard reference and proposed designs.**

**TABLE ((R405.5.2(1))) R402.4.2(1)
SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS**

Air exchange rate	<p>Air leakage rate of 5 3 air changes per hour at a pressure of 0.2 inches w.g. (50 Pa). The mechanical ventilation rate shall be in addition to the air leakage rate and the same as in the proposed design, but no greater than $0.01 \times CFA + 7.5 \times (N_{br} + 1)$</p> <p>where: CFA = conditioned floor area N_{br} = number of bedrooms</p> <p>- <u>The mechanical ventilation system type shall be the same as in the proposed design.</u> Energy recovery shall not be assumed for mechanical ventilation.</p>	<p>As proposed^a. The mechanical ventilation rate^b shall be in addition to the air leakage rate and shall be as proposed.</p>
-------------------	---	--